The CHEMIST

MARCH, 1940 VOLUME XVII, No. 3

ANNUAL MEETING, MAY 18, 1940
ATLANTIC CITY, N. J.

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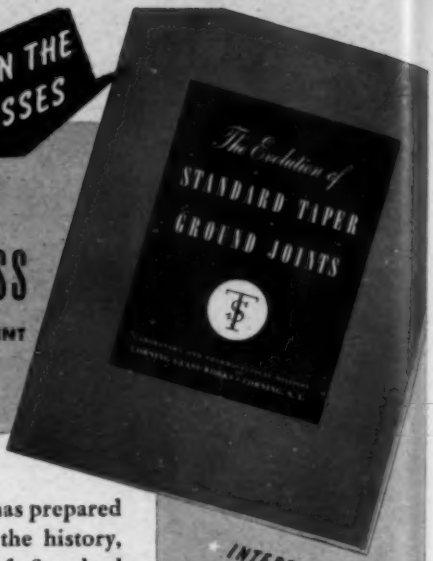

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The CHEMIST

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THE AMERICAN INSTITUTE OF CHEMISTS
HOWARD S. NEIMAN, *Secretary*
233 Broadway
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Eighteenth Annual Meeting

of

The American Institute of Chemists

at

The Claridge Hotel
Atlantic City, N. J.

May 18, 1940

PROGRAM

11:00 A.M. Registration. Souvenirs.

12:00 Noon. Luncheon Meeting of the National Council.

2:00 P.M. Address:

DR. ROBERT P. FISCHELIS, secretary and chief chemist of the New Jersey State Board of Pharmacy, Member of New Jersey State Board of Health. *The Status of the Chemist under the New Food, Drug, and Cosmetic Laws.*

3:30 P.M. Annual Business Meeting.

7:00 P.M. Banquet.

Presentation of the Medal
of
THE AMERICAN INSTITUTE OF CHEMISTS
to
DR. GUSTAV EGLOFF
Director of Research, Universal Oil Products Company

Speakers

COLONEL GEORGE A. BURRELL,
President, Atlantic States Gas Company
The Medalist

DR. ROBERT J. MOORE, *Presentation of Medal.*
DR. GUSTAV EGLOFF. *Acceptance.*

Please make your reservations early. Additional information appear on page 106.

UNDERWOOD AND UNDERWOOD

Medal Award to Dr. Gustav Egloff

The medal of THE AMERICAN INSTITUTE OF CHEMISTS, presented annually for outstanding service to the science of chemistry and the profession of chemist in America, has been awarded this year to Dr. Gustav Egloff, director of research, Universal Oil Products Company, Chicago, Illinois. The award is made in recognition not only of Dr. Egloff's work in developing some of the most outstanding processes for the refining and treating of crude oils and gasoline; for his prodigious amount of publications in the field of petroleum and hydrocarbon chemistry, amounting to over four hundred articles and books; for the issuance to him of over two hundred and fifty patents relating to the processing of petroleum oil, coal, shale oil, and chemical derivatives of hydrocarbons, which are invaluable to the research workers in chemistry, but also for the outstanding service which he has given to the advancement of chemists.

The medal will be presented to Dr. Egloff at the annual meeting of

THE AMERICAN INSTITUTE OF CHEMISTS to be held at Atlantic City, New Jersey, May 18, 1940.

Dr. Egloff received his B.A. degree from Cornell University followed by the M.A. degree from Columbia University, when he became Barnard Research Fellow and assistant curator of the Chandler Museum at Columbia University. After obtaining the Ph.D. degree from Columbia, he was employed by the United States Bureau of Mines and the Aetna Chemical Company. In 1917 he left to become director of research for Universal Oil Products Company in Chicago, Illinois, the position which he still holds.

In recognition for his outstanding work in petroleum technology, he has been selected as delegate to eleven international meetings since 1927, where he has presented papers dealing with refining processes, and has presided over several of these meetings. He was appointed a member of the Permanent Council for the World Petroleum Congress. The American Institute of Mining and Metallurgical Engineers appointed him to act in an advisory capacity to the Museum of Science and Industry of Chicago. He has also been appointed again as chairman of the International Petroleum Exposition and Congress of Tulsa for 1940; he served as chairman of the Petroleum Section of the Conference on Instrumentation in the Process Industry held in Pittsburgh, Pennsylvania, in 1939, and chairman of the Oil Processing Division of the Temperature Symposium held in New York in 1939; in addition to many other positions of recognition.

Busy as Dr. Egloff is in his research activities, he is always willing to serve his fellow chemist through committees and association work and has given generously of his time and encouragement to young chemists. He is well known as a lecturer and has addressed national and local meetings of the American Petroleum Institute, the American Chemical Society, and many universities and associations; including radio broadcasts for Science News Service. He was elected American correspondent of the Institute of Petroleum, and since 1927, he has written the yearly reviews of the cracking art which appear in the proceedings of the Institute of Petroleum of London.

Among Dr. Egloff's books are, "Emulsions in the Oil Industry", "Catalysis", "Modern Motor Fuel Sources", "The Refining of Motor Oils", "Physical Constants of Hydrocarbons", and "The Thermal Reactions of Pure Hydrocarbons".

Our Patent System

By **Charles W. Rivise, F.A.I.C.**

A talk given before the Technical Association of the Pulp and Paper Industry which will interest the chemist-inventor.

THE economic and industrial achievements of the American people have been truly remarkable. In the short space of one hundred and fifty years, we have grown from an insignificant group of agricultural and trading communities to the greatest industrial nation on earth. In a recent issue of the *Atlantic Monthly*, Wendell L. Wilkie stated:

> "Three conditions are primarily responsible for the extraordinary economic achievements of the American people. We were, of course, lucky in coming to a land where the natural resources were abundant. We were even luckier to come to it at such a time and under such circumstances that it could be developed as a whole, before it was chopped up into small competing territories as in Europe. This meant that we were not only rich in raw materials, but blessed with the greatest free-trade area in the world. We could ship our goods from one coast of the continent to the other without ever paying a tariff or passing a customs inspection.
>
> "To these physical conditions our forefathers added what might be called a spiritual one: a faith in individual initiative and free enterprise. When our forefathers said 'freedom', they did not mean simply freedom of speech, freedom of press, or freedom of religion. They meant economic freedom as well. They were strong believers in the desirability of encouraging business enterprise."

It is because our forefathers had an abiding faith in individual initiative and free enterprise that they wrote into the law of the land a patent system based upon an entirely new principle; namely, that a man's invention is something peculiarly his own. Hence, our patent laws, unlike those of most other countries, require that the inventor, and he alone, shall make application for the patent. For the same reason, patents in this country are issued without any strings or conditions attached to them. The patent is the inventor's, to do with as

he pleases, and is not subject to an annual tax or compulsory working, as in certain foreign countries. Hence, if an American inventor is poor, and the greatest inventors have been poor, and cannot manufacture or induce others to manufacture his device for him, his patent cannot be taken from him as in foreign countries. In this connection, it is to be noted that in countries that require the payment of annual taxes and compulsory working, a manufacturer, who wishes to avoid paying royalties to the inventor, need only wait until the inventor permits his patent to lapse for failure to pay the taxes or to work the invention, in order to appropriate to himself the results of the inventor's work.

From almost the very beginning, our patent system has been the object of sporadic and violent attacks, in Congress and out of Congress. Many of the attacks have come from persons who did not understand the nature of a patent right and did not realize the important part our patent system has played in the industrial development of America. Other attacks have come from some special groups that discovered to their surprise and discomfiture that patents cannot always be infringed with impunity. Recently, the patent system has been attacked on the ground that patents are either monopolistic or tend to foster monopoly, that they stifle competition, that they favor larger corporations and intrenched privilege to the detriment of smaller concerns and individual inventors, and that they cause unemployment. Many of its critics are ready to admit that the patent system has been a powerful factor for good in the past, but contend that it has long since outgrown its usefulness and should be either abolished entirely or radically changed.

It can readily be shown that patents are not monopolistic. Patents are issued only for new and useful inventions, and hence cannot be said to deprive the public of anything in which it already had an interest. On the contrary, the hope of obtaining patent protection serves to stimulate inventiveness and ingenuity and to induce inventors to make public their inventions and discoveries. At the end of the patent term, the invention becomes public property, and hence the public comes into possession of an invention which the patentee might have suppressed entirely or practiced secretly, had he not been induced by the hope of patent protection to make a public disclosure.

As Daniel Webster said in his now famous argument in the Goodyear Vulcanized Rubber case in 1852:

> "The right of an inventor to his invention is no monopoly. It is no monopoly in any other sense than as a man's own house is a monopoly. A monopoly, as it was undertsood in the

> ancient law, was a grant of the right to buy, sell or carry on some particular trade, conferred on one of the king's subjects to the exclusion of all the rest. Such a monopoly is unjust. But a man's right to his own patent is a very different matter. It is no more a monopoly for him to possess that, than to possess his own homestead.
>
> "But there is one remarkable difference in the two cases, which is this, that property in a man's own invention presents the only case where he is made to pay for the exclusive enjoyment of his own. For by law the permission so to enjoy the invention for a certain number of years is granted, on condition that, at the expiration of the patent, the invention shall belong to the public. Not so with houses; not so with lands; nothing is paid for them, except the usual amount of taxation; but for the right to use his own, which the natural law gives him, the inventor as we have just seen, pays an enormous price. Yet there is a clamor out of doors calculated to debauch the public minds."

It can also be shown that patents do not necessarily tend to stifle competition. Inventors are invariably stimulated by the existence of patents in their fields not only to devise improvements, but also to develop non-infringing ways of accomplishing the same result. The fact that the new ways of accomplishing the old result can be patented induces men with capital to exploit the new invention in competition with the old. I personally know several cases in which an inventor or a small manufacturer, with very little means or prestige, was able, because of a patented invention, to enter a field that had previously been dominated and controlled by several large corporations. In at least one case, the field was controlled by a combine of several companies that by means of overlapping patents was able to dominate the industry to the extent of fixing prices. However, the monopoly of the combine was not safe, for a poverty stricken inventor invented a much better product and was able to obtain a patent. The fact that he received a patent rendered it possible for the poor inventor to raise the necessary capital to finance the invention and create a competing business. The new product was so much better than the old that the consuming public flocked to the new product, thereby destroying the strangle-hold that the patent combine previously had on the industry. Without the protection of a patent, it would have been practically impossible to induce moneyed men to enter into competition with the

patent combine. Hence, the patent had the effect of creating and fostering competition.

It can also be shown that patents as such do not necessarily favor larger corporations to the detriment of smaller concerns and individual inventors. Larger corporations have no greater advantages in the field of patents than they have in other fields. In fact, the ownership of a strong patent has often enabled an independent inventor or a small concern to deal on an equal basis with a very large corporation having unlimited resources. In many cases, large corporations have been compelled to pay heavy damages for the infringement of a patent owned by a poor inventor or a concern having limited resources. It is particularly to be noted that new companies are constantly being organized to exploit newly patented inventions, and that of necessity most new companies are small and start with limited finances. To a small concern, the possession of a good patent gives it the same advantage that a high powered rifle gives to a man in a jungle.

It is being stated with increasing frequency that the individual inventor is rapidly vanishing, and that the really important inventions are now being made in the research laboratories of the large corporations. Hence, it is argued that the stimulus and incentive of the patent system is no longer needed. Dr. Grosvenor, writing in 1929, and Dr. Rossman, writing in 1931, agree that the majority of the most important inventions and achievements in industry are still being made by the individual inventor, particularly by the so-called industrial inventor. At the recent hearings before the Temporary National Economic Committee, Dr. Bush of the Carnegie Institute of Washington stated that the independent inventor has a much wider scope of ideas than the research worker, and often produces out of thin air strikingly new and useful devices which might otherwise have been lost. At the same hearings, Mr. Kettering of General Motors Corporation paid tribute to the many brilliant men outside of the industrial laboratory by stating "we don't lock our laboratories up for the reason that we lock so much more out than we can in."

It is often stated that patented inventions are deliberately kept from the public as long as possible. There is very little, if any, truth in this statement. It is obviously to the interest of the inventor to make his invention available to the public at the earliest possible moment, and many inventors move Heaven and Earth to place the device of the invention into the hands of the consuming public. Everybody, who has ever made an invention or tried to exploit an invention, knows tha

it is one thing to make the invention and quite another to make a successful commercial product. It requires time and effort to interest capital and to develop the necessary machinery and processes to produce the new product first on a semi-commercial scale and then on a commercial scale. The development stage has been well named the "shirt-losing" stage, because most inventions fail at this point. Though no market has yet been developed and no money is coming in, nevertheless a product has to be produced that will satisfactorily meet not only the use requirements but also the idiosyncrasies of the consuming public. Considering the resistance of the public to new products and new ways of doing things, it is often a wonder that some inventions get as far as they do. It often takes as many as ten years for an invention to go from the idea stage to the point where it starts bringing a return to the people behind the invention. In some of the industries, particularly the heavy industries such as printing presses, and the metallurgical industry, this period may be greater than ten years. Hence, the patent term of seventeen years is in many cases entirely too short to compensate adequately the inventor for the time, effort and money which he put into his invention.

It is also often stated that inventors keep their applications pending as long as possible. This is only partially true. Most of the delay in getting a patent is generally due to the large number of applications that are always awaiting action in the Patent Office, the small number of patent examiners, and the inadequate classification system for patents. Then, the granting of the patent is often held up because the inventor and the examiner cannot agree on the scope of the patent so that the inventor has to appeal to the Board of Appeals and possibly to the courts. Then again, about five per cent of the applications become involved in interferences, and if the interference is hotly contested, the case may be delayed four or five years more. Most of the interferences are honest contests of priority, but unfortunately there are a few industrial establishments that make it a practice to file drag-net applications in an attempt to pirate the inventions of persons unable to protect adequately their interests.

I regret that space requirements make it impossible for me to discuss the hearings that were recently held before the Temporary National Economic Committee and the tentative recommendations which it made to Congress. It is my opinion, and I have so expressed myself to the Committee, that the position of the individual inventor and of the small manufacturer was not adequately presented. This is reflected

in the Committee's recommendations, several of which have already been enacted.

Three of the provisions are to my mind particularly detrimental to the interests of the individual inventor and the small industrial establishment. Effective August 5, 1940, the period within which an inventor may make public use or sale of the device of his invention before filing his patent application has been reduced from two years to one. The cutting down of the period of permissible public use will automatically eliminate a large number of inventors who find it necessary to obtain some financial return before going to the expense of filing patent applications. Furthermore the Supreme Court of the United States has recently decided that the provision as to public use is a discrimination in favor of foreign inventors, who may use their inventions in their own countries for any number of years, and then upon learning that the invention is being commercialized in the United States rush to the Patent Office and obtain a valid patent. At the time of the decision, the period of permissible public use was two years. Hence, the law changing this period to one year is still more discriminating against American inventors.

Effective August 7, 1939, the Commissioner was authorized in his discretion to require an applicant to respond to an Office Action within six months *or such shorter time, not less than thirty days,* as may be fixed in a written notice to the applicant. I was opposed to this change, but now that it has been made it is my hope that Commissioner will apply it *with a great deal of discretion.*

The Temporary National Economic Committee also recommended a change in the term of the patent. At the present time, patents, for every subject matter except designs, are issued for seventeen years from the date of issuance. The recommended change would keep this period at seventeen years, but provides that the period shall in no case be more than twenty years from the date of the application. Hence, if an application is delayed in the Patent Office for five years through no fault of the inventor, nevertheless the actual life of the patent is cut by two years.

This recommendation, to my mind, is a discrimination against the individual inventor and small industrial establishments. Large corporations have the means to add more men to their patent departments to complete the prosecution of patent applications within three years, whereas many inventors are greatly put to it as matters now stand in prosecuting their applications as quickly as possible. In many cases,

inventors will have to take time from the important work of exploiting the invention to gather the necessary data and to otherwise cooperate with their patent attorneys to get their application through in three years. In many cases, it will necessarily mean that the inventor will have to cancel some of the claims necessary to protect adequately the invention in order to obtain a patent for the full seventeen years. In view of the circumstances, it is not at all surprising that the large companies are behind the proposed change. It will add to their expense of getting patents, but it will certainly eliminate a goodly number of their smaller competitors as far as patents are concerned.

In my opinion, the position of the individual inventor and of the small industrial establishment has not been adequately presented to the Temporary National Economic Committee. Patentees have been accused of using patents for improper purposes and in an improper manner, but very little has been said of the tactics of certain industrial establishments. Inventors are the benefactors of humanity, and we owe it to them to make their way easier and to endeavor to put a stop to certain improper practices against them.

The Committee should investigate the common practice of obtaining disclosures from inventors and then filing conflicting applications in the Patent Office so that the invention may be pirated with impunity. The Committee should investigate the refusal of certain concerns to pay royalties under any circumstances. The Committee should look into the practice of "ganging up" on patentees, who seek the protection of the courts. Several large competitors often contribute to defense funds against a smaller competitor, thereby greatly increasing his burden. In a few instances, large corporations have joined a "Holy War" against an individual inventor, though the subject matter of the patent was not of their concern.

Dr. Guy Awarded Herty Medal

The 1940 Herty Award, presented annually by the Chemistry Department of the Georgia State College for Women, Milledgeville, Georgia, will be bestowed on Dr. J. Sam Guy, professor of chemistry at Emory University, Atlanta, at a meeting of the Georgia Section of the American Chemical Society to be held on May 4, 1940, at Georgia State College. Dr. Guy is being honored for personal achievement as reflected through Emory's department of chemistry.

The Young Chemist and the Government Service

By **Louis Marshall, F.A.I.C.**

The twelfth of a series of articles on the opportunities for chemists in the Government service.

A FIELD of work which, up to the present time, has been rather unusual and seldom occurring, but which gives promise of experiencing considerable development in the future, has to do with the methods of scientific crime detection. The Department of Justice, harbor of the famous "G-men", maintains a finely equipped laboratory in Washington, D. C., to assist in its work of tracking down crimes and criminals. The laboratory was established in 1932. Previous to that time, outside experts were engaged when the solution of a crime hinged upon a scientific analysis or other technical investigation. This work became so important and fruitful, however, that the Federal Bureau of Investigation of the Department of Justice established its own laboratory. It was carefully planned and developed with the assistance of authorities in criminology, and today, it is one of the outstanding crime detection laboratories in the world. Fully twenty-five rooms in the Department of Justice Building at Washington, D. C., are utilized for laboratory work and for housing a museum of scientific crime detection methods. The work carried out in the laboratory is, as can be expected, exceedingly varied, and the personnel includes expert chemists, physicists, metallurgists, microscopists, and others. It has become a kind of national clearing house for crime detection, and a clear indication of the importance ascribed to scientific methods can be obtained by noting the number of samples of different kinds submitted by various law-enforcement agencies for detailed examination. In a fifteen month period, eight hundred and seven articles were submitted for chemical analyses. Three thousand nine hundred and ninety-two items were treated chemically for the development of latent fingerprints; eight articles were received for spectrographic analyses, and eight for X-ray examination; thirty-nine articles were received for glass fracture examination; one hundred and eighty-two for metallurgical examination; eight hundred and fifteen articles for microscopical, and two hundred and forty-six for petrographic analyses. In

addition, two thousand and forty-nine threatening letters and other illegal notes, and questioned documents were submitted and examined for identification purposes; and so on. The wide variety of the samples which required examination indicates the necessity for the scientific laboratory in modern crime detection work. Many of the samples are submitted by state and local police departments and as the result of laboratory examination, it happens not infrequently that members of the technical staff are called to distant points to testify as expert witnesses at criminal trials.

Authorities whose business it is to know such matters concede that there are all too many murders which not only have escaped detection, but which have not even been officially listed as such; the verdict, after a superficial examination, often being death by heart failure, suicide, etc. There are cases for which scientific methods provide the only means of, first, determining whether a crime has been committed, and secondly, if the answer is yes, of the apprehension of the criminal. It is of the greatest importance to the stability of society that crime be detected and criminals punished according to laws.

In one recent case, a woman was found dead in the bedroom of a tenement house apartment. In the adjoining kitchen, all the jets of gas were open. It looked like suicide. However, experienced eyes detected irregularities. For one thing it so happened that the odor of gas was quickly detected, the apartment was entered, and the baby of the house was found, still alive. This circumstance demanded explanation, since poisonous fumes sufficient to end the life of an adult would certainly have killed an infant. Scientific examination was then instituted which revealed that the carbon monoxide content of the blood of the victim was not unusually high. Hence death could not have been due to illuminating gas, and marks on the body showed that the real cause was strangulation. After that, routine police work pointed unerringly to the murderer. He it was who turned on the gas after committing his crime, thinking that by so doing he would create the illusion of suicide.

If this same crime were committed in a place where careful investigations are not the rule; where, for example, the determination of the carbon monoxide content of the blood of a suspected victim of murder is never carried out, and there are many such places, it is very likely that a verdict of suicide would have been reached and a major crime would have escaped detection.

Many other cases can be cited in which the findings of the technical laboratory were instrumental in the solution of crimes. One of these

cases dealt with the theft of certain firearms from a military reservation. About one month after the theft, four shotguns which were part of the loot were recovered, hidden away in a canvas bag. The preliminary investigation of the crime directed attention to a private who was a tailor attached to one of the companies on the reservation. This man denied any knowledge of the crime, but the canvas bag which contained the shotguns, together with samples of thread used by the tailor and materials stitched upon his machine, were submitted to the technical laboratory. Examination in the laboratory disclosed that the thread used in stitching the canvas bag and the thread taken from material in the private's shop were identical as to their dye content and fiber structure. Additional evidence appeared when it was found that the stitches on the canvas bag were of exactly the same length as those made by the sewing machine used by the soldier. When the latter was confronted by the authorities with this scientific evidence, he admitted his guilt.

Another case involved the identification of men who sent extortion letters to a certain party demanding money under threat of bodily injury to the intended victim and his family. Suspicion was fastened upon two men who were found near the payoff spots designated in the extortion letters. One of these men was found to have a paper pad on one of the pages of which indented writing traces could be seen. This evidence, and samples of the handwriting of the suspect were submitted to the technical laboratory for examination. The handwriting was found to be identical with that in the extortion notes. In addition, the sheet containing the indentations was placed in a parallel beam of light, and the shadows cast by the light revealed that the indentations consisted of words which were identical with the words in one of the extortion letters. These findings were introduced as evidence at the trial of the suspect, and resulted in a jury verdict of guilty. A few years ago, the Federal Bureau of Investigation was engaged in a case in which an extortionist demanded, in a letter, that the victim deposit a sum of money by the side of a certain rock which was to be identified by the presence of white paint on its surface. The rock was located by the investigators who scraped off a little paint and sent it to the technical laboratory. Along with this sample, the laboratory also received a quantity of white paint found in the possession of the suspect. The small fragments of paint obtained from the rock were analyzed by means of a quartz spectrograph and were found to be of the zinc base type. The analysis of the other paint, however, revealed it to be of the titanium

base type, which strengthened the alibi of the suspected party. Thus does a modern crime detection laboratory perform the duties of a fact-finding workshop; making no effort to convict when the evidence reveals innocence.

A fifth case, which involved the restoration of obliterated writing, was undertaken not to solve a crime, but to assist in establishing the cause of an airplane wreck. The airplane crashed into a mountain peak while on a regular commercial flight, and subsequent investigation led to the discovery of the log maintained by the pilot. It was so badly stained with oil, however, that it was impossible to read the notations made upon it. The log was taken to the technical laboratory where, under ultra-violet light, fluorescence of the oil spots caused by the rays against the graphite deposit from the lead pencil made previously indistinguishable writing clearly visible. Thus it became possible to study what the pilot had written previous to the disaster.

On other occasions, obliterated writing has been restored by means of infra-red photography which permits the reading of words which have been heavily overlaid with ink spots; or by chemical treatment of the document; or by microscopical examination which reveals the displacement of the fibers caused by the writing instrument; or, as in the case of the extortion letter cited above, the original writing is determined by casting a parallel beam of light across the face of the document. It may be observed that, contrary to the writings of certain imaginative authors, law-enforcement laboratories perform no miracles in the solution of crime. Old-fashioned, intelligent police work is still very necessary. The functions of the laboratory are the weighing of evidence and the establishment of incontrovertible facts. In this country, unlike in Europe, the medical examiners' departments with their complement of toxicologists, pathologists, and physicians are called upon to investigate all cases of sudden deaths. They are usually under separate jurisdiction from the laboratories dealing with the other and more recent police sciences, although the work of the two departments is often intimately related.

The Director of the Federal Bureau of Investigation, J. E. Hoover, has repeatedly drawn attention to the value of crime detection laboratories in police work, and it is probable that the future will witness a decided increase in the opportunities for chemists as well as other scientists in this field.

At the present time, the scientific work of the Federal Bureau of Investigation is accomplished by a staff which includes nine chemists.

The United States Public Health Service

The United States Public Health Service, for many years under the supervision of the Treasury Department, but now a part of the Federal Security Agency, is charged with the responsibility of investigating infectious and contagious diseases, and with all other matters which pertain to public health. In carrying out this broad mandate which so vitally and directly affects every inhabitant of the United States, the Service has built up an organization of professional men and women which cannot fail to call forth the admiration and respect of all those who have studied it. The researches of the Service are conducted in the laboratories of the National Institute of Health now located at Bethesda, Maryland, and in field laboratories throughout the country. The laboratories at Boston are devoted to the study of tumor diseases; those at Philadelphia, Pennsylvania, to heart disease; at Savanah, Georgia, to malaria; at Honolulu, Hawaii, to leprosy; at Staten Island, New York, to venereal diseases, and so on. In addition to this investigative work, The Public Health Service strives to prevent the spread of disease from foreign countries into the United States. As an aid in carrying out this part of its duties, information is gathered throughout the world regarding the prevalence of communicable diseases. Quarantine officers in one year inspected fifteen thousand nine hundred and eight-one vessels carrying seven hundred and thirty-three thousand four hundred and ninety-five passengers and one million one hundred and eighty-two thousand two hundred and thirty-two seamen. In addition, airplanes arriving from foreign countries are examined whenever possible under the quarantine regulation. As a result of this inspection work, it was found necessary to fumigate one thousand one hundred and ninety-three vessels either for the destruction of rats, or because of the presence on board of some contagious disease. Medical officers of the Service give physical examinations to alien passengers and seamen at the various ports of entry, and those who are found to have a quarantinable disease, are denied admission. The fact that no importation of any quarantinable disease occurred during the fiscal year 1939 attests the efficiency and the thoroughness of this vitally important inspection work.

A general description of scientific activities in the Government service would not be complete without mentioning the work in chemistry of the Public Health Service; and this, not so much because of the number of chemists employed as because of the quality, the importance

and the fundamental significance of the work. The division of chemistry is headed by a man who in 1916 won the Nichols medal of the American Chemical Society, and in 1929 the Willard Gibbs medal.

The passage of the Social Security Act has made possible the enlargement of the functions and activities of the Public Health Service, and it is not unlikely that the future will witness the appointment of a number of additional chemists who will have the opportunity to serve in this splendid organization.

Most of the research work in chemistry is done at the laboratories of the National Institute of Health, formerly situated at 25th and E Streets, N. W., in Washington, D. C. The new headquarters of the Institute are located at Bethesda, Maryland, where modern buildings for research and administrative work are being constructed on a seventy acre tract of land. In the past, the work of the Division of Chemistry has involved such topics as the investigation of products used in chemotherapy, such as the arsphenamines; the organic synthesis of compounds which are useful in medical research; the study of the chemistry of vitamins, enzymes, and hormones; and physico-chemical investigations of compounds as a step leading to the understanding of chemical reactions. At the present time, the studies concern such problems as the chemotherapy of bacterial infections; the nature of enzyme action, and, of fundamental importance, the determination of the chemical structure of certain carbohydrates. For example, the experiments on oxidations in the sugar group have demonstrated the susceptibility to cleavage of the hexose molecule in the center of the chain, producing optically active glyceraldehyde. This achievement has furnished a new method for the determination of the structure and configuration of many organic compounds. Similar studies have been carried out on a seven-carbon sugar, namely, d-mannoheptulose which is obtained from the avocado pear. This sugar, incidentally, was shown to be metabolized in feeding experiments on rabbits, and its tolerance was very high. These facts may, in time, point the way to interesting applications in the field of medicine. Attempts are being made to apply the results of the sugar researches to the field of bacteriology to provide better means for the identification of bacteria. For example, two kinds of micro-organisms obtained from the soil under avocado trees in Florida, have been found capable of utilizing the sugar, d-mannoheptulose, which is obtained from the fruit of the tree. These chemico-bacteriological studies are continuing. The cleavage type of oxidations using periodic acid and sodium metaperiodate as reagents has been

proven an effective method of studying the structure not only of the simpler sugars, but also of the polysaccharides.

The chemistry division also analyzes samples of water obtained from various localities, to determine their fluoride content. This work is done in coöperation with dental officers of the Public Health Service in their studies of the mottled enamel of teeth caused by minute quantities of fluoride ion in drinking water. One of the objects of this investigation is to determine definitely what is the maximum amount of fluoride which may be present in drinking water without causing any mottling of the teeth. An effective method for the removal of fluorides in water was found to be precipitation by means of magnesium oxide. The chemists coöperate with another division in the preparation of certain complex organic compounds useful in pharmacological studies. They also prepare all the standard solutions and the hydrogen ion standards, and they do all the chemical analyses required by other divisions of the Public Health Service.

The researches on cancer are conducted at Boston, Massachusetts, and also at Bethesda, Maryland, where the newly organized National Cancer Institute is located. One of the problems investigated is the ultra-violet absorption spectra of compounds which have been found capable of producing cancer experimentally. These carcinogenic compounds occur mainly in the anthracene series, as for example dibenzanthracene. A method is being worked out whereby it will be possible to study the absorption spectrum of a carcinogenic compound present in a tissue without intereference of the other substances present. The results of the investigations of this laboratory are often published in the *American Journal of Cancer*. Besides compounds belonging to the anthracene series, simpler benzene derivatives are being tested for carcinogenic action in an attempt to determine the cause of the "aniline cancer" of the dye industry. A paper describing this work, entitled "The Production of Tumors in Mice with Hydrocarbons", appeared in the *American Journal of Cancer* for February, 1936, and other papers along the same line have appeared since that time. Another compound, a dye, 2-amino-5-azotoluene, has been found capable of producing liver tumors in rats and mice. It may be observed, in this connection, that an important tool is placed in the hands of experimenters when they know how to produce a disease in animals, since they are then in a better position to study that particular disease; its causes, effects, prevention, and cure.

One of the recent findings of the Leprosy Investigation Station a

Honolulu, Hawaii, was that the inoculation of the organisms of leprosy into rats that have been deprived of vitamin B_1, produces the disease sooner than in rats fed on a normal diet. This seems to confirm the belief held by some epidemiologists that some relationship exists between the state of nutrition and the susceptibility to leprosy.

The investigations into the problems of nutrition are carried out mainly in Bethesda, Maryland. One experiment recently was carried out to determine the effects which the long-continued addition of traces of sodium fluoride to drinking water, had on the teeth of dogs. It was found that the mottling of the enamel of dogs' teeth closely resembled that of humans. The dogs subjected to this test showed no gross change of bony structure.

The conclusion reached some years ago, that pellagra is caused by certain deficiencies in the diet was due to the work of an officer in the Public Health Service whose outstanding achievement has, since that time, been universally recognized. The nutrition laboratory has been conducting tests on various foodstuffs to determine their pellagra-preventive value. Recent findings have demonstrated that canned mackeral is good in this respect, and extracts of liver are valuable in the treatment of the disease. Attempts were made to prepare a number of fractions from yeast to determine which one was highly efficient as a pellagra preventative, but as yet no fraction was found suitable for large-scale use in human pellagra prevention. Another work on which the Nutrition Section is engaged is the study of the distribution of ascorbic acid (vitamin C) in various portions of the plant, as affected by age, light, temperature, moisture, and other factors. It was demonstrated that plants grown under low light intensity synthesize less vitamin C than those grown under conditions of greater illumination.

The Public Health Service maintains a laboratory at Cincinnati, Ohio, for the study of water purification and sewage treatment. The problem of lessening the pollution of streams is one of great importance to many industrial localities where the over-burdening of streams may menace the public health conditions of a community. Studies are being carried out to learn the precise steps involved in the disintegration of sewage by different methods of treatment. The widespread use of chloramine in the disinfection of water supplies has made it necessary to develop a specific test for small amounts of the chemical in water, and this has been successfully accomplished by workers in the laboratory.

Although most of the chemical work is assigned to the division of Chemistry, there are other branches of the Public Health Service which

utilize the services of chemists. One of these is the Division of Industrial Hygiene which seeks to develop means for the protection of the health of the working population. Its activities include field investigations as well as laboratory and clinical work. For example, the granite industry is studied to determine the presence of silicosis among the workers; the deleterious effects of insecticidal spray residues upon men engaged in their manufacture is another concern of the division; as is studies of the health hazards in the lead storage battery industry; in felt hat factories which use mercury; in plants manufacturing certain industrial organic compounds, and so on. The publications reporting the investigations of this division appear in the official *Public Health Reports* and in outside periodicals. There are two mimeographed bulletins which list the publications of the Public Health Service on industrial hygiene subjects. They may be obtained by writing to the Service.

One of the promising fields of investigation in medicine is chemotherapy, which has engaged the interest of workers in the Public Health Service. This science, which is devoted to the discovery of drugs capable of killing disease-producing organisms has already led to results of the greatest significance. It has found a way to treat syphilis by the use of mercury and salvarsan; and malaria by means of quinine.

The Public Health Service has, in recent years, issued a series of publications representing its contributions to this field. In one of these publications, the effects of certain organic compounds on the therapy of experimental animals that had been inoculated with pneumococcus organisms were discussed. It was found that para-aminobenzene sulphonamide had a marked curative action upon rats. These animals were inoculated with type I, type II, or type III pneumococci, and then some of them were given the treatment with the sulphonamide, while the others were used as controls. All of the control animals died of the infection, whereas there was one hundred per cent survival among the animals that were given the type II or type III, and seventy per cent survival of those inoculated with the type I organisms. These difficult experiments clearly indicated the value of the sulphonamide in the treatment of pneumococcus infections.

The effects of two chemically related compounds were studied, but neither one was found to be as valuable as the para-aminobenzene sulphonamide in the treatment of pneumococci infections in rats. These researches in chemotherapy, which are fraught with significance in the treatment of human diseases, are continuing.

It must be observed that the effects of certain drugs upon human beings are not always predictable from animal experiments. To quote from one *Public Health Report,* "The clinical use of a new drug should be preceded not only by a thorough pharmacological and toxicological study of the drug upon several species of animals, but also by a careful study of its effects upon human beings under conditions where they can be closely observed for a considerable period of time." If this warning had been observed a few years ago, the deaths caused by the use of sulphanilamide in diethylene glycol would have been avoided.

The publications reporting the researches of the United States Public Health Service have appeared in many of the outstanding scientific periodicals of the world. In addition some of its publications appear in certain series, printed by the Government Printing Office, and sold by the Superintendent of Documents at Washington, D. C., for very nominal prices. For instance, there is the "Keep Well Series," which consists of small pamphlets presenting important health facts in popular form.

The *Public Health Bulletins* of the Service are designed as an aid to health officers in the solution of many local health problems. Number 69 in this series is entitled, "Typhoid Fever—its Causation and Prevention." Number 195 presents a review of carbon monoxide poisoning.

The Public Health Reports deal with a wide variety of topics which are important in health conservation work. These include stream pollution, sanitary milk and water supply, control of communicable diseases, and others. The publications on chemotherapy are included in this series. There is also a series of pamphlets, some of them written in popular style, giving information regarding the extent, methods of prevention, and control of venereal diseases.

All of these contributions taken together show what a powerful force the Public Health Service is in raising the health level of the nation. It is a war-waging organization. Its weapons are the hospitals, the clinics, the laboratories, the industrial establishments, and all other places where people go about their daily tasks. Its enemies are the occult living and inanimate forces which bring plague, sickness, disease, and death. Its great constructive labors reflect lustre upon a Government that encourages it, and the greater the moral and material encouragement, the greater will be the beneficent results. The combined efforts of its scientists will continue to produce advances in the science and the art of living well.

COUNCIL

OFFICERS

President, Robert J. Moore
Vice-President, J. W. E. Harrisson
Secretary, Howard S. Neiman
Treasurer, Burke H. Knight

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Donald H. Andrews
Ross A. Baker
M. L. Crossley
Gustav Egloff
Henry G. Knight
W. T. Read
Norman A. Shepard
Foster D. Snell
Maximilian Toch
Lloyd Van Doren
Gerald Wendt

CHAPTER REPRESENTATIVES

New York	*Niagara*	*Philadelphia*	*Washington*
Charles A. Marlies	A. W. Burwell	Gilbert E. Seil	Albin H. Warth

February Meeting

The one-hundred and sixty-eighth meeting of the Council of The American Institute of Chemists was held on February 13, 1940, at The Chemists' Club, 52 East 41st Street, New York, New York.

President Robert J. Moore presided. The following officers and councilors were present: Messrs: R. A. Baker, J. W. E. Harrisson, B. H. Knight, H. G. Knight, C. A. Marlies, R. J. Moore, H. S. Neiman, W. T. Read, G. E. Seil, N. A. Shepard, F. D. Snell, and M. Toch. Mr. M. R. Bhagwat and Miss V. F. Kimball were present.

The minutes of the previous meeting were approved.

The Treasurer's report, showing a bank balance as of February 13, 1940, of $3,457.24, was read and accepted.

A letter from Dr. M. L. Crossley, chairman of the Committee on Professional Education, was read requesting that he be relieved of the chairmanship due to lack of time to attend to this responsibility. Dr. Donald Andrews was appointed chairman of this committee.

A letter from the secretary of the Washington Chapter was read, and after discussion, the secretary was instructed to give this chapter permission to consider a member in Dayton, Ohio, who is frequently in Washington, as a member of the Washington Chapter, so far as he may attend meetings, but that the Institute will still regard him as a member-at-large. Every individual member-at-large should consider him-

self a membership committee to obtain enough members in his district to form a Chapter.

The following new members were elected:

FELLOWS

Avedikian, Souren Z.
(1940), *Chemical Engineer,* Edgewood Arsenal, Edgewood, Maryland.

Bigelow, M. H.
(1940), Plaskon Company, Inc., 2112-24 Sylvan Avenue, Toledo, Ohio.

Bixby, Emily May
(1940), *Chemist,* Wrentham State School, Wrentham, Mass.

Brannon, James L.
(1940), *Chemist,* Bakelite Corporation, River Road, Bound Brook, N. J.

Burrell, R. C.
(1940), *Associate professor,* Department of Agricultural Chemistry, Ohio State University, Columbus, Ohio.

Coster, H. M.
(1940), *Chemist,* U. S. Naval Powder Factory, Indian Head, Md.

Cothran, John C.
(1940), *Professor,* Duluth State Teachers College, Duluth, Minnesota.

Drake, G. Wilson
(1940), *Professor,* University of Houston, Houston, Texas.

Eastman, Irene
(1940), *Professor,* Bathgate, Minn.

Fasce, E. V.
(1940), *Research Chemist,* Standard Oil Company of Louisiana, Baton Rouge, La.

Genstein, Edgar S.
(1940), *President, Technical Director, General Manager,* Kem Products Company, 229 High Street, Newark, N. J.

Germuth, Frederick G.
(1940), *Head, Division of Research,* Department of Public Works, Bureau of Standards, Baltimore, Md.

Goodell, J. E.
(1940), *Chemist and Bacteriologist,* Old City Hall, Penn Square, Lancaster, Penna.

Haskins, Caryl P.
(1940), *Consultant,* Haskins Laboratories, 480 Lexington Avenue, New York, N. Y.

Honish, John K.
(1940), *Department Manager, Technical and Production,* Bakelite Corporation, River Road, Bound Brook, N. J.

Hopper, T. H.
(1940), *Senior Chemist,* Soybean Laboratory, U. S. Department of Agriculture, Washington, D. C.

Hoyt, Creig S.
(1940), *Professor,* Grove City College, Department of Chemistry, Grove City, Pennsylvania.

Jones, W. Catesby
(1940), *Chief Chemist,* Commonwealth of Virginia, Department of Agriculture and Immigration, Division of Chemistry, 1121 State Office Building, Richmond, Virginia.

Kemmerer, Arthur R.
(1940), *Associate Chemist,* Texas State Experiment Station, College Station, Texas.

Kennelly, R. Grice
(1940), *Chemist,* E. I. duPont de-Nemours and Co., Longmeadow, Mass.

Kniseley, John M.
(1940), *Chief Chemist,* Laucks Laboratories, Seattle, Washington.

Kik, M. C.
(1940), *Assistant professor Agricultural Chemistry,* Department of Agricultural Chemistry, University of Arkansas, Fayetteville, Arkansas.

Kurth, Ervin F.
(1940), *Research associate,* The Institute of Paper Chemistry, Appleton, Wisconsin.

Levey, Harold A.
(1940), *Consulting Chemist and Industrial Engineer,* 8127-33 Oleander Street, New Orleans, La.

Littman, J. B.
(1940), *Chief Chemist,* Packard Electric Division, General Motors Corp., Warren, Ohio.

Lord, Erskine D.
(1940), *Chief Chemist and Assistant Superintendent,* J. S. Barnet and Sons, Inc., Marblehead, Mass.

Low, George W., Jr.
(1940), *Assistant to Chief Chemist,* American Viscose Corporation, Front Royal, Virginia.

Lueck, R. H.
(1940), *Manager of Research Department,* American Can Company, 11th Avenue and Charles Road, Maywood, Illinois.

Marble, John Putnam
(1940), *Research Associate,* National Research Council, Department of Geochemistry, Washington, D. C.

Martin, Lena
(1940), *Associate Professor,* Georgia State College for Women, Milledgeville, Ga.

McIlvain, J. M.
(1940), *Administrative Supervisor,* Research and Development Department, The Atlantic Refining Company, 3144 Passyunk Avenue, Philadelphia, Pennsylvania.

Milligan, W. O.
(1940), *Research Assistant,* The Rice Institute, Houston, Texas.

Milne, David T.
(1940), *Research Chemist,* Sylvania Industrial Corporation, Fredericksburg, Va.

Minne, Nels
(1940), *Professor,* Winona State Teachers College, Winona, Minn.

Muller, Julius F.
(1940), *Director,* The Muller Laboratories, 3156 Frederick Avenue, Baltimore, Md.

Nelson, Rudolph S.
(1940), *Patent Attorney,* Union Carbide and Carbon Research Laboratories, Inc., 30 East 42nd Street, New York, N. Y.

Nieder, Philip G.
(1940), *Consulting Industrial and Engineering Chemist,* 521 West 23rd Street, New York, N. Y.

Peakes, Lawson V., Jr.
(1940), *Research Chemist,* Beech-nut Packing Company, Canajoharie, N. Y.

Petty, Gerald M.
(1940), *Assistant Chemist,* Laboratory of Industrial Hygiene and Toxicology, 80 Maiden Lane, New York, New York.

Pollard, E. F.
(1940), *Assistant Professor,* The Tulane University of Louisiana, New Orleans, La.

Pomerene, Elizabeth
(1940), *Biochemist,* St. Luke's Hospital, 11311 Shaker Boulevard, Cleveland, Ohio.

Pritham, Gordon H.
(1940), *Associate Professor,* St. Thomas College, Scranton, Penna.

Redman, Bryan C.
(1940), *Research Chemist,* American Cyanamid Company, Stamford, Conn.

Roberts, Willard L.
(1940), *Research Chemist,* General Foods Corporation, Battle Creek, Michigan.

Robey, Ashley
(1940), *Professor and Head,* Department of Chemistry, Arkansas State College, State College, Ark.

Rudd, W. F.
(1940), *Dean,* Medical College of Virginia, Richmond, Va.

Sand, Ole O.
(1940), *Industrial Chemist,* Bakelite Corporation, River Road, Bound Brook, N. J.

Schneider, Frank
(1940), *Instructor,* Department of Chemistry, Queens College, Flushing, L. I., New York.

Scott, G. C.
(1940), *Director of Research,* Minnesota Valley Canning Company, LeSueur, Minn.

Seegers, Walter H.
(1940), *Research Associate,* The State University of Iowa, College of Medicine, Department of Pathology, Iowa City, Iowa.

Sinkinson, Eric
(1940), *Associate Professor,* Department of Mining Engineering, Lehigh University, Bethehem, Pa.

Stowe, Vernon M.
(1940), *Research Chemist,* Solvay Process Company, Hopewell, Va.

Stright, Benjamin Morrow
(1940), *Chief Chemist,* General Railway Signal Company, Rochester, New York.

Taggert, Matthew F.
(1940), *Director of Research,* O'Brien Varnish Company, South Bend, Ind.

Touchstone, J. H.
(1940), *Professor,* Philander Smith College, Little Rock, Arkansas.

Volk, N. J.
(1940), *Soil Chemist,* Department of Agronomy and Soils, Alabama Polytechnic Institute, Auburn, Alabama.

Weidenbaum, Bernhardt
(1940), Crown Willamette Paper Company, Camas, Washington.

White, Chester M.
(1940), *Chemist,* Puritan Soap Company, Rochester, N. Y.

Wilson, John L.
(1940), *Laboratory Director,* Economics Laboratory, Inc., 914 Guardian Building, St. Paul, Minn.

Young, C. B. F.
(1940), *Consultant and Professor,* Box 292, Flushing, L. I., N. Y.

JUNIOR

Weitzel, Charles W.
(J.1940), *Junior Chemist,* Johns-Manville Corporation, 22 East 40th Street, New York, N. Y.

STUDENT

Weiler, James L.
(S.1940), *Student,* University of Cincinnati, Cincinnati, Ohio.

Dr. Snell reported progress for the Committee on Licensing.

Mr. Bhagwat reported for the Chemist Advisory Council and thanked the Institute in behalf of the Chemist Advisory Council for the privilege of attending Council meetings.

An application for membership was referred to the Committee on Ethics.

There being no further business, adjournment was taken.

March Meeting

The one-hundred and sixty-ninth meeting of the Council of THE AMERICAN INSTITUTE OF CHEMISTS was held on March 5, 1940, at The Chemists' Club, 52 East 41st Street, New York, New York.

President Robert J. Moore, presided. The following officers and councilors were present: Messrs: R. A. Baker, M. L. Crossley, J. W. E. Harrisson, B. H. Knight, C. A. Marlies, R. J. Moore, H. S. Neiman, W. T. Read, G. E. Seil, F. D. Snell, and M. Toch. Mr. M. R. Bhagwat and Miss V. F. Kimball were present.

The minutes of the previous meeting were read and corrected to include the following omitted motion: "Upon motion made and seconded, a vote of thanks was extended to the Committee on Membership for its splendid work."

The Treasurer's report, showing a

bank balance as of March 5, 1940 of $3544.83, with no unpaid bills, was read and accepted.

The secretary announced that the membership now numbers 1563.

Upon motion made and seconded, the following new members were elected:

FELLOWS

Brumbaugh, N. J.
(1940), *Professor,* Juniata College, Huntington, Pennsylvania.

Bruner, R. C.
(1940), *Director of Laboratories,* Chappel Laboratories, Rockford, Illinois.

Dorfman, M.
(1940), *Chemist,* Agfa Ansco Corporation, Binghamton, New York.

Elliott, C.
(1940), *Chief Chemist,* Chappel Laboratories, Rockford, Illinois.

Glidden, K. E.
(1940), *Research Chemist,* Brown Company, Berlin, New Hampshire.

Herzog, J. V.
(1940), *Assistant to Department Head,* Bakelite Corporation, South Bound Brook, New Jersey.

Jacobson, B. H.
(1940), *Plant Manager,* Ohio-Apex Incorporated, Nitro, West Virginia.

Jensen, O. G.
(1940), *Research Chemist,* The Borden Company, Bainbridge, New York.

Johnson, J. G.
(1940), *Research Bio-chemist,* Chappel Laboratories, Rockford, Illinois.

Kurtz, H. F.
(1940), *Professor,* College of Arts and Sciences, Mercer University, Macon, Georgia.

Lecher, H. Z.
(1940), *Associate Director of Research,* Calco Chemical Company, Bound Brook, New Jersey.

LeGrys, H. J.
(1940), *Chief Chemist,* Stackpole Carbon Company, St. Mary's, Penna.

McKeen, J. E.
(1940), *Assistant Superintendent,* Charles Pfizer and Company, Brooklyn, New York.

Moulton, J. D.
(1940), *Chief Chemist,* Edison Storage Battery Division, Thomas A. Edison Company, West Orange, New Jersey.

Olsen, J. W.
(1940), *Chemist in Charge of Analytical Laboratory, Edison Storage* Battery Division, Thomas A. Edison Company, West Orange, New Jersey.

Osgood, H. S.
(1940), *Assistant Professor of Chemistry,* Westminster College, New Wilmington, Penna.

Owens, H. S.
(1940), *Assistant Professor, chemistry,* University of Idaho, Moscow, Idaho.

Pierce, H. B.
(1940), *Associate Professor of Biochemistry,* University of Vermont, College of Medicine, Burlington, Vermont.

Schaeffer, H. F.
(1940), *Professor of Chemistry,* Waynesburg College, Waynesburg, Penna.

Schmidt, E. H.
(1940), *Chief Chemist,* Borne-Scrymser Company, Elizabeth, New Jersey.

Schur, M. O.
(1940), *Technical Director,* Brown Company, Berlin, New Hampshire.

Sowa, F. J.
(1940), *Consulting Organic Chemist,* Cranford, New Jersey.

Sumner, J. K.
(1940), *Research Chemist,* Rohm and Haas Company, Bristol, Penna.

Tremearne, T. H.
(1940), *Chemist*, Bureau of Plant Industry, Fertilizer Research Division, Washington, D. C.

Vorterresian, K. A.
(1940), *Research Chemist*, Petroleum Laboratories, State College, Penna.

Volk, N. J.
(1940), *Soil Chemist*, Alabama Polytechnic Institute, Auburn, Alabama.

ASSOCIATES

Hall, Stanley A.
(A.1940), *Junior Chemist*, U. S. Department of Agriculture, Naval Stores Division, Washington, D. C.

Joshel, L. M.
(A.1940), *Assistant Chemist*, U. S. Department of Agriculture, Naval Stores Division, Washington, D. C.

Upon motion made and seconded, Laszlo Auer, *Chief Chemist*, Electro-Technical Products, Inc., Nutley, New Jersey, was elected to Fellowship to take effect immediately after he receives his final citizenship papers.

Dr. Read, Chairman of the Membership Committee, reported for that Committee and told of plans for the future.

The subject of eliminating the Student and Junior membership classes was discussed and was referred to a committee appointed by the President to study the classes of membership and to report to the Council.

The President appointed a Committee on Membership Classes to consist of Dr. W. T. Read and Dr. M. L. Crossley.

The Secretary read a letter from Dr. Ralph T. K. Cornwell of Fredericksburg, Virginia, regarding the formation of a Virginia Chapter of the INSTITUTE.

Dr. Snell reported progress for the New York State Committee on Licensing.

Upon motion made and seconded, Roland M. Whittaker, J.A.I.C. and Elmore H. Northey, A.A.I.C. were raised to Fellowship.

Upon motion made and seconded, Dr. Arthur J. Hill was elected to Life Membership without dues in recognition of his achievements.

Mr. Bhagwat reported progress for the Chemist Advisory Council and told of some of its recent activities in helping the unemployed.

There being no further business, adjournment was taken.

CHAPTERS

New York

Chairman, Harry G. Lindwall *Vice-Chairman*, Beverly L. Clarke

Secretary-treasurer, D. H. Jackson
17 John Street
New York, N. Y.

Council Representative, Charles A. Marlies

Dr. Benjamin T. Brooks, F.A.I.C. will speak at the meeting of the New York Chapter on Friday, April 26, 1940. His subject will be, "Chemical and Political Interests in Tropical Colonies".

Niagara

Chairman, Maurice C. Taylor *Vice-chairman,* F. W. Koethen

Secretary-treasurer, Alvin F. Shepard
90 Courier Boulevard
Kenmore, N. Y.

News Reporter to THE CHEMIST, Margaret C. Swisher
Council Representative, Arthur W. Burwell
Carl H. Rasch, *Alternate*

A MEETING of the Niagara Chapwas held at the Buffalo Museum of Science on March 1, 1940.

After the dinner, Mr. G. H. Crawford, Comptroller of the Dunlop Rubber Company, spoke on "The Financial Aspects of a Chemical Industry." Mr. Crawford explained how a budget was made up from past records and said that it was altered continuously during the year to meet the changing conditions. A daily, weekly, and monthly check of the business against the budget must be made and the budget and plans altered accordingly. The Dunlop Rubber Company does four per cent of its business in January and thirteen per cent in July but, because of weather conditions, it is more pleasant and more efficient to manufacture their products during the cold weather. If manufacturing is above average during the dull months in order to take advantage of the weather, it means tying up much of their capital on which no return is possible for many months. When markets slump and sales are below normal, the time interval between the manufacture and the sale of the product must be shortened and more manufacturing done during the summer months. When the cost of production goes up, more sales must be made and new markets opened. During January this year, the war closed certain markets and others were opened further away. Since it takes about sixty days for a shipment to reach Singapore and most of these sales are made on sight-drafts with ninety days to pay, it means that the product is manufactured six months before it is paid for.

Mr. Crawford explained their continuous inventory system; mentioned a few of the factors that determine the time of buying their crude materials; told why they use the bonus system for their managers; how they find out where a certain inefficiency has increased the cost of a product and how this inefficiency is removed. Although his talk was specifically applicable to his rubber industry, the members present learned much about the financial management of an industry.

Dr. W. Hyden of Du Pont Company asked how a Research Budget was set up and how adjustments were made for changing conditions. Mr. Crawford said that when there is plenty of profit, research budgets are increased and when the slumps appear, this is one of the first to be curtailed.

The supper meeting was adjourned at 8:30 P. M. so that the members could attend a demonstration and lecture given by Mr. A. E. Jennings of the R. and H Chemical Company, on "Liquid Air." Mr. Jennings' talk was presented on the Hayes Lecture Series and under the auspices of the Niagara Chapter of THE AMERICAN INSTITUTE OF CHEMISTS.

Pennsylvania

Chairman, Walter L. Obold *Vice-chairman*, A. C. Angus

Secretary-treasurer, Harry C. Winter
The Biochemical Research Foundation
133 South 36th Street
Philadelphia, Penna.

Council Representative, Gilbert E. Seil

News Reporter to THE CHEMIST, Kenneth A. Shull

THE February meeting of the Pennsylvania Chapter was held at the Christian Association Building, on the evening of Tuesday the twenty-seventh. At the short business meeting which followed an informal dinner, Dr. J. W. E. Harrisson spoke briefly on the activities of the National Council.

The main speaker was Dr. Raymond E. Kirk, F.A.I.C., head of the Department of Chemistry at the Brooklyn Polytechnic Institute and a former chairman of the New York Chapter. His topic was "Research Frontiers in Inorganic Chemistry".

The past ten years has seen a greatly increased activity in the field of inorganic research. This has come about largely through the availability of new tools and new theoretical concepts and, what is just as important, pressure from the large chemical industries for additional information about the materials which they use.

Today there is no divorce between pure and applied chemistry. Those working in institutional research laboratories may have in mind only a particular problem *per se*; yet their results and the products which they develop will, at some time, be put to practical use by others.

Dr. Kirk believes that many chemists are handicapped because of the fact that they once had an excellent professor of chemistry. Such a "prof." was well able to simplify or super-simplify chemical concepts. But in so doing he neglected to point out that these simplifications do not always apply to industry. As a result, the student graduating from college and entering his chosen field is often forced to change his entire idea of chemistry.

Some of the newer tools and concepts of inorganic chemistry which were briefly discussed by Dr. Kirk are the following:

(1) X-ray analysis — has enabled scientists to peer into the structure of crystals, etc.

(2) Valence.

(3) Newer concepts of acids, bases, and salts.

(4) Solvent systems.

(5) Coördination compounds.

As usual, a number of questions were asked the speaker at the close of his very interesting and timely talk.

"Science plays a three-fold rôle in American culture. First, it supplies a direct outlet for man's creative instinct in building the structure of scientific knowledge, second, it supplies the means of living a life richer in health and in variety of experience, and third, it creates a world setting in which man must rapidly adapt himself to live as part of a more extensive and more highly coördinated society."

—ARTHUR H. COMPTON.

Washington

President, Frank O. Lundstrom

Vice-president, Albin H. Warth *Treasurer,* Philip A. Wright

Secretary, Martin Leatherman
9 Quincy Avenue, Hyattsville, Md.

News Reporter to THE CHEMIST, Alexander J. Stirton

Council Representative, Albin H. Warth

Executive Committee

J. R. Adams	H. C. Fuller	N. W. Matthews	W. H. Ross
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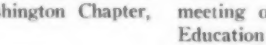
The annual dinner and meeting of the Washington Chapter was held on Tuesday, March 26, 1940, at the Wardman Park Hotel. The national officers, President Robert J. Moore and Councilor Donald H. Andrews, were guests. Dr. Henry G. Knight, another guest of honor, expressed his regret at being unable to attend. Frank O. Lundstrom, president of the Washington Chapter, presided.

President Moore presented the greetings of the National Organization and in a brief and interesting talk, covered a number of topics. He acquainted the members with the personnel of the National Council, spoke of the work of the Secretary, Howard S. Neiman, the healthy status of the INSTITUTE, and the work of the Chemist Advisory Council. The subject of the state licensing of chemists was reviewed in a very enlightening manner. The Washington Chapter was very grateful to President Moore for his presence and his comments.

Dr. Donald H. Andrews, chairman, Department of Chemistry, The Johns Hopkins University, addressed the meeting on the subject, "Professional Education in Chemistry". Dr. Andrews is chairman, and President Lundstrom, secretary, of a National Committee on Professional Education, created by the INSTITUTE. One of the functions of this committee is to stimulate programs on questions of professional education and chemical degrees. The speech of Dr. Andrews was very successful. It was quite thought provoking and aroused considerable interest.



More than three hundred and fifty exhibits, built entirely by student scientists, will be presented at the twelfth Annual Science and Engineering Fair, under the auspices of the American Institute Science and Engineering Clubs, to be held at the American Museum of Natural History April 14-20

BOOKS

THE CYCLOTRON. *By* W. B. Mann, B.Sc, Ph.D., University of London, with a foreword by Professor Ernest O. Lawrence, University of California, Berkeley. *Chemical Publishing Company.* 1940. xi + 92 pp. $1.50.

In 1930, Dr. E. O. Lawrence of the University of California at Berkeley designed the first cyclotron. For this invention and for his subsequent research with the high speed ions it produces, Dr. Lawrence was named last year's Nobel Laureate in Physics

So rapid has been the development of this new research instrument, those not working in its immediate field have overlooked its importance until very recently. Now, with the appearance of cyclotrons in other physics laboratories, research workers in biology and chemistry are beginning to realize the possibilities of such quantities of high speed ions as may be produced by this instrument.

Dr. Mann, for two years a student with Dr. Lawrence, is well qualified for his present undertaking. He has brought together in this concise monograph sufficient theoretical and practical material to acquaint the layman fully with the cyclotron and to serve the physics student with a nucleus for study in this field.

The first chapter presents a brief history and a general description of the instrument. The second chapter is devoted to the theory of operation and includes a discussion of some of the limitations of the cyclotron. The next three chapters detail the design of the vacuum chamber and the magnet, the ion source and the high frequency supply, and the focusing of the ion beam. The sixth chapter briefly surveys the applications of the instrument to the fields of physical, chemical, and biological research. Finally there is given a list of fifty-one references to work which has already been accomplished in all of these fields.

This, the first book devoted to the cyclotron, will be most welcome to the physicists, biologists, and chemists interested in research with high speed ions.

—EDWARD C. HORN.

GROWING PLANTS WITHOUT SOIL. By D. R. Matlin. *Chemical Publishing Company.* 1939. 137 pages. $2.00.

This book gives in brief form information about the many-named science of plant chemiculture, hydroponics, soilless agriculture, aquaculture, and tank farming, or the growing of plants in nutrient solutions instead of soil. A short history of successful experimental work is given from the time of Julius Sacks who, in 1860, published a formula which is essentially like that used today, to its present importance in the commercial production of flowers and vegetables.

Formulae are given for nutrient solutions with instructions for their preparation and adaptation to the needs of different varieties of plants.

"There is a relationship between the elements in the soil and the elements in plants. These are passed on from plant to animal. Here is a new field for experimenters to make new surprising discoveries." This contemplation of the interrelationship between the effects of chemicals on plant and animal life probably accounts for the inclusion in this book of such chapters

as those on vitamins and minerals essential to life, percentage composition of foods, and chemical tests for amateurs.

Brief chapters discuss hormones and auxins, budding and grafting, construction and operation of green houses, reaction of plants to chemicals, tests for metals, and in addition, instructions for taking care of plants in nutrient solutions. Material specifically adapted to the growing of plants in the vicinity of Los Angeles is included.

The author is professor of plant chemiculture at Belmont Evening High School, Los Angeles, California, and the material in this interesting book is based upon the original experiments carried out by him and his students.

—V. F. Kimball.

BAKING POWDERS, INCLUDING CHEMICAL LEAVENING AGENTS, THEIR DEVELOPMENT. CHEMISTRY, AND VALUATION, By Simon Mendelsohn, F.A.I.C. *Chemical Publishing Company.* 1939. 178 pages. $4.00.

The material in this book has been selected to fill a deficit in technical literature pertaining to baking acids and chemical leavening agents. The author, for ten years chief chemist of a large baking powder company, is known for his contributions to the technical literature on the chemistry of baking materials, and as a consultant in the food and pharmaceutical fields. He has included in this volume recent commercial developments, and has treated completely each phase of baking powder technology—compounding, sifting, and packing. Many formulae and testing methods for raw materials and finished products are given. Chapter headings are: Development of Chemical Leavening Agents; Manufacture, Properties, and Evaluation of Baking Powder Constituents; Technical Evaluation of Baking Powders; Appendix: Statistical Data; Tables: Supplementary References. There are nineteen illustrations and many tables, including a table of correction factors for the gasometric determination of carbon dioxide. An excellent bibliography completes this well-written and informative book, which will be most valuable to all who are interested in the baking industries.

OFFICIAL METHODS OF ANALYSIS OF THE INTERNATIONAL SOCIETY OF LEATHER TRADES' CHEMISTS. Compiled by Messrs. Atkin, Chambard, Loos, and Thompson. *Chemical Publishing Company.* English Section 81 pp. French Section 75 pp. 1938. $3.50.

The official and provisional official methods of analysis of the International Society of Leather Trades' Chemists are published in this volume in two parts, English and French, and include the amendments adopted at a conference held in Copenhagen in 1937.

Chapters include official methods for sampling tanning materials; quantitative tannin analysis; testing hide powder; determination of pH of tanning extracts and liquors; determination of copper content of tanning extracts; analysis of vegetable tanned leather; determination of the acidity of vegetable tanned leathers; analysis of chrome leather; analysis of one-bath chrome liquors and solid chrome tanning compounds; analysis of oils and fats; analysis of sulphated oils; analysis of used lime liquors; analysis of sodium sulphide; analysis of lactic acid. Provisional methods are given for quantitative tannin analysis and for the determination of the total sulphur dioxide set free by acid from bleaching extracts.

Chemists interested in leather will find this volume useful.

NORTHERN LIGHTS

By **Howard W. Post, F.A.I.C.**

From the current issue of the *C-I-L Oval* comes a story of New Zealand's sheep and Canada's minerals. It seems that some time ago, the sheepmen of New Zealand found their sheep suffering from some sort of nutritional disease. Long and careful investigation showed that their diet lacked cobalt. Further investigation showed that without a certain minute amount of cobalt neither sheep nor cattle could properly absorb and utilize iron and copper, and the supply of cobalt in the soil of New Zealand was limited. The answer lay in the cobalt deposits of Canada. Today salt blocks are shipped from Canada to New Zealand for placement in pastures and these salt blocks contain a small percentage of cobalt.

Progress in the Canadian linseed and soybean industries—eleven plants in 1938 produced goods to the value of $3,680,647, of which linseed oil accounted for $2,535,455, the largest single item. In the same year 1,579,190 bushels of flaxseed were used, over 740,000 being of domestic origin.

An editorial in *Canadian Chemistry and Process Industries* of a recent date stresses a noted tendency on the part of Canadian engineers "toward the acceptance of a greater measure of leadership in national and public spheres". As we read further, we find, "The world seems ready to listen rather attentively to a new kind of 'medicine man', and in a sense is prepared for the simple and direct logic that guides the engineering mind. A few economists with scientific and engineering training have attempted to show that the laws governing energy and wealth creation are about the same. They have tried to point out that something for nothing and perpetual motion are impossibilities."

THE SCIENCE ANGLER

Kenneth E. Shull, J.A.I.C.

While perusing one of our popular magazines we came across a paragraph of statistics which went something like this: Certain fields in Wisconsin contain about one hundred mice to the acre and each "Micky" eats an average of twenty-three pounds of green food in a year. From this it would appear that a little over two thousand pounds of food per acre would be guzzled in a year.

At this rate of consumption we wonder if there is any produce left for the poor hard working farmer.

Man has done a lot with iron and its relative, steel. Yet the fly in the ointment has always been the problem of preventing the metal from rusting. There are several methods now by which this can be accomplished, one of the most important of which consists in painting the exposed surface with some protective coating.

From the land of Hitlerism comes word of the development of a new aluminum-silicon alloy pigment which possesses exceptional rust inhibiting properties. The pigment itself is made

up of 87 per cent aluminum and 13 per cent silicon and, when mixed with a suitable vehicle, is said to possess outstanding covering power, great tenacity, good elasticity, and high tensile strength.

The skin, being the body's largest organ, plays an important part in normal respiration. Unfortunately, as the twilight hours of life approach and ones hair (if any) not-too-slowly turns to silver, the degree of skin respiration gradually decreases.

One way to correct this is to bring about stimulation through the use of certain specially developed skin respiration stimulants. These are usually prepared by extracting the active principle from yeast and other living cellular material and incorporating it in cosmetic creams.

The idea is in itself not new, for we are really doing what "Confucius say-". The ancient Chinese mixed minced dried frog skin with fats and applied it to the skin. And according to reports this crude preparation actually stimulated circulation and aided in the healing of wounds.

Engineers are naturally interested in knowing how much wear various types of concrete floors are able to withstand. However if tests were to be conducted by human locomotion many years of perambulation would be required in order to effect a noticeable indentation.

Recently scientists at the Bureau of Standards put into use a specially designed portable machine which not only produces rapid wear of the concrete surface but also measures the work accomplished.

Studies carried out thus far on one hundred and thirty-eight slabs of concrete seem to indicate that the use of metallic hardeners, dust coats containing cement, and delayed trowelling tend to increase wear resistance.

Just a great big "bunch of fragrance". Such is the description given to a new product known as Tonola 30. This concoction, made from "home grown materials" can be blended with nearly every type of perfume oil and imparts a flower-like aroma to it.

CHEMISTS

Institute of Food Technologists Meet

The first meeting of the Institute of Food Technologists is to be held June seventeenth to nineteenth at the Morrison Hotel, Chicago, Illinois. The program will consist of four three-hour sessions devoted to symposia on "Food Engineering" and on the "Influence of Processing on Vitamin Content of Food," supplemented by voluntary and solicited papers on food preservation, composition of foods, methods of analysis of foods, and packaging of foods. The third day will be given to visits to Chicago's food manufacturing plants.

The Institute of Food Technologists was organized in Cambridge, Massachusetts, last July at the close of the Second Conference on Food Technology held under the auspices of the Massachusetts Institute of Technology

Its officers are: President, Dr. S. C. Prescott, dean of science, Massachusetts Institute of Technology; vice-president, Dr. Roy C. Newton, chief chemist, Swift and Company, Chicago, Illinois; secretary-treasurer, Dr. G. J. Hucker, New York State Agricultural Experiment Station, Geneva, N. Y. Its membership consists of chemists, bacteriologists, process engineers, and others similarly trained or experienced in the manufacture, preservation and handling of food.

Dr. Robert J. Moore, development manager of the Bakelite Corporation, will address the American International Academy on March 28 on the subject of "Synthetic Resins in the Paint and Varnish Industry." The lecture will be given in the Science Building of Loyola College, Baltimore, Maryland, with Dr. V. A. Ryan, head of the Section on Chemistry, in the chair.

American Chemical Exposition

Chemistry and chemical industry will be featured by the Chicago Section of the AMERICAN CHEMICAL SOCIETY in its American Chemical Exposition, to be held at Chicago, December 11-15, 1940, at the Stevens Hotel.

The Exposition will be held in even numbered years to alternate with the New York Exposition of Chemical Industries, and its emphasis will be placed on chemical products. Scientific exhibits will be included. "The show is designed to depict the science of chemistry in many of its phases and its application to industry and the needs of man. Chemistry . . . provides civilization the luxuries as well as the necessities of life. It has also done its share in providing work for the unemployed through the medium of new developments and applications which it has opened by discoveries necessitating the building of new plants or the occupancy of idle factories."

The Exposition manager is Mr. M. W. Hinson with offices at 110 North Franklin Street, Chicago, Illinois.

"Any attempt to keep the hand of the past on the pulse of the future, to solve the problems of tomorrow with the mechanisms of yesterday can be at best only indifferently successful."

—John D. Rockefeller, Jr., on the occasion of his retirement from the Rockefeller Foundation.

Questions

We have received a letter containing the following questions, and we would appreciate the help of any of our readers who could assist us in answering them:

What chemical field is the least crowded?

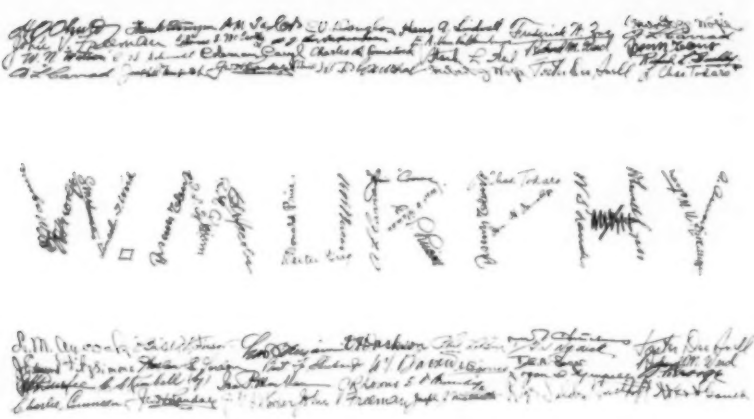
Which chemical fields have little or no health hazards?

What chemical fields offer the best opportunity for good working conditions? What fields allow one to work under conditions where one is not under constant pressure of rushing? Offer the best opportunity for advancement?

Is there any chemical field that always has a lack of chemists? Is there any field that will have a lack of chemists in the future?

What chemical field is less apt to dismiss the chemical laboratory worker when he becomes old?

What, if any, chemical field allows one to "free lance"?



On Wednesday evening, March twentieth, a very successful testimonial dinner was given in the main dining room of The Chemists' Club in honor of Mr. Walter J. Murphy, editor of *Chemical Industries*. The occasion of the celebration was to congratulate him for having advanced to this position at such a relatively youthful age.

Mr. E. L. Luaces served as toastmaster and told many interesting and amusing incidents connected with his friendship with the guest of honor over a long period of years.

Mr. Ira MacNair of MacNair-Dorland Publishing Company was the first speaker to be introduced by the toast-master. He referred to himself as the oldest living alumnus of the "Haynes College of Journalism", and of the guest of honor as one of this institution's youngest alumni who have made progress in a big way. Mr. MacNair spoke of the hazards of editorial work in general and of the numerous editorial workers who at one time or another in their career had been discharged or otherwise fallen by the wayside before reaching, or even approaching, the prominence now achieved by Mr. Murphy.

Dr. C. R. Downs talked briefly on his associations with Mr. Murphy and on the important work his magazine is now doing for the chemical and related industries. Dr. Downs presented Mr. Murphy with a set of the proverbial editors' blue pencils.

Dr. W. S. Landis, vice-president of the American Cyanamid Company, and one of Mr. Murphy's former employers spoke of his associations and answered to the satisfaction of all the embarassing question asked by the toast-master about his former employee.

Brief comments were made from the floor including words of wisdom from Dr. H. O. Chute, and numerous telegrams of congratulations from some of Mr. Murphy's friends, who were unable to attend, were read. Music was provided throughout the dinner and afterwards. The seventy-odd people attending the dinner left with the idea that, while it may take much more than the average amount of hard work to become a successful editor, the effort is well worth-while.

EMPLOYMENT

Chemists Available

COLLEGE TEACHER. American, Ph. D., F.A.I.C., Sigma Xi. Inorganic analytical, organic and industrial chemistry. Several years' university teaching, six years' experience in the chemical industry in heavy chemicals, analytical methods, control, supervision. Publications. Location anywhere. Please reply to Box 31, THE CHEMIST.

RESEARCH - DEVELOPMENT CHEMIST, F.A.I.C., M.S. (M.I.T.) Organic Chemistry. Ex-chief chemist forced to change by conditions beyond his control. Well qualified by sufficient training and fifteen years (in good positions) in chemicals, latex, gases, and patents. Best personal and professional references. Complete details for confidential consideration. Available now. Please reply to Box 11, THE CHEMIST.

CHEMIST, F.A.I.C., A.C.S. Doctor of Chemistry. 29 years manufacturing and developing experience in intermediates, dyestuffs, metal salts and food products. Original manufacturing processes developed. Successful in handling labor. Considerable consulting and business experience. First class references. Please reply to Box 35, THE CHEMIST.

BIOLOGIST. B.A. degree 1939. Seeking position as laboratory assistant. Knows French and Swedish. Summer experience with Marine Biological Laboratory. Please reply to Box 121, THE CHEMIST.

CHEMIST. B.S., M.S. Age 40, with good record of successful business experience has funds to promote sound product or join new chemical business venture. Would also be interested in adding capital to established enterprise which requires services of a capable executive. Address full particulars to Box 33, THE CHEMIST.

CHEMIST. B.S. Age 26. Phi Lambda Upsilon. Graduate work in Organic, Physical Chemistry and Biology. French and German. Most interested in synthesis or determination of substances of biological significance. Experience in inorganic and analytical. Will listen to proposition with future. Please reply to Box 21, THE CHEMIST.

METALLURGICAL ANALYST. F.A.I.C. Long experience in analysis of iron, steel, ferrous and non-ferrous alloys. Can take charge of laboratory. Please reply to Box 113, THE CHEMIST.

FOOD AND DRUG CHEMIST. F.A.I.C., Ph.D. Formerly superintendent of manufacture of drug products; teaching experience in food and drug analysis; consultant on food and drug labels. Chief chemist in brewing manufacture; bacteriology and research on methods in brewery. Successful in handling men. Has published twenty-two papers. Listed in *American Men of Science*. Expert witness in court cases. Please reply Box 123, THE CHEMIST.

Members of The American Institute of Chemists may insert Position Wanted or Position Available notices without charge.

Government Searching for Chemists for Farm Laboratories

The Department of Agriculture will make a large number of appointments in the new Regional Laboratories for Research on Utilization of Farm Products as a result of examinations to be announced by the Civil Service Commission in the near future. These examinations will be held in the grades from P-2 ($2600), Assistant Chemist and Assistant Chemical Technologist, to P-5 ($4600), Senior Chemist and Senior Chemical Technologist.

Dr. Henry G. Knight, F.A.I.C. of the Bureau of Agricultural Chemistry and Engineering calls especial attention to the significance of the fact that these examinations are the first to be held for Chemists and Chemical Technologists in these particular grades since the establishment of the regional laboratories in July 1938.

These examinations will soon be announced. During the next two years about 400 appointments to the regional laboratories will be made from Civil Service registers established through those new examinations. Positions will be filled requiring the services of organic, physical, and analytical chemists, and others in the fields of carbohydrate chemistry, protein chemistry, oil chemistry, cellulose chemistry and chemical engineering as well as in a number of other fields.

The examinations when announced will be given wide-spread publicity. All inquiries should be addressed to the United States Civil Service Commission, Washington, D. C.

Positions Available

ORGANIC CHEMIST. Experience in field of dielectrics and impregnating materials for electric capacitors.

OUTSTANDING MEN to work as plant superintendents or equivalent. Must have experience in the manufacture of smokeless powder or pyrocotton.

RUBBER RESEARCH CHEMIST. Preferably post graduate training. Experience with rubber manufacturer required. Not over 40. $3600.

CHEMIST. Production experience in photographic emulsions. $4000.

PH.D. Not over 50. With organic research experience. Work in East. High salary.

THE AMERICAN INSTITUTE OF CHEMISTS
233 Broadway, New York, N. Y.

I shall attend with guests, the Annual Meeting ☐ Banquet ($3.00) ☐ of The American Institute of Chemists to be held on May 18, 1940, at the Hotel Claridge, Atlantic City, N. J.
Please make reservations.

. . . . . .
(Signature)

Objectives
of the
AMERICAN INSTITUTE of CHEMISTS

To give chemists professional solidarity.

To put the profession back of a definite code of ethics.

To insist on adequate training and experience qualifications.

To educate the public to an understanding of what a chemist is.

To protect the public and the profession by fighting quackery.

To raise the economic status of chemists.

HOWARD S. NEIMAN, *Secretary*
The American Institute of Chemists
233 Broadway, New York, N. Y.

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